

**WHAT IS CLAIMED IS:**

1. A proofing head assembly comprising:
  - a) a color light analyzer;
  - b) a color printhead; and
  - c) a housing joining the printhead to the color light analyzer and directing the printhead and color light analyzer at a media plane.
2. The proofing head assembly of claim 1 further comprising:
  - a) a controller to operate the color light analyzer to make color measurements of an image and to instruct the printhead to render images on a receiver media.
3. The proofing head assembly of claim 2 wherein said controller calculates color adjustments using color measurement data from said color light analyzer and adjusts the colors printed by the printhead.
4. A proofing head assembly as claimed in claim 3, wherein said controller adjusts the printing instructions transmitted to the printhead to match the visual appearance of an image printed by the printhead to the appearance of the same image as printed by another printer.
5. A proofing head assembly as claimed in claim 3, wherein said controller calculates color adjustments by comparing color data measured from a printed image to baseline color data.
6. A proofing head assembly as claimed in claim 5, wherein said controller instructs the printhead to print a color having known image code values and said color light analyzer to measure the color printed by the printhead while the image is printing.
7. A proofing head assembly as claimed in claim 2 wherein said controller uses said color light analyzer to measure the colors printed by the

printhead on a receiver media to verify that the colors printed on the media visually match the instructions sent to the printhead.

8. A proofing head assembly as claimed in claim 2 wherein said controller compares the color data measured from an image during the printing of an image to the colors that the printhead was instructed to render and provides a signal if the comparison indicates that the colors do not match.

9. A proofing head assembly as claimed in claim 3, wherein said controller adjusts the operation of the printhead during printing operations to cause the colors in the printed image to conform to the colors that the printhead was instructed to print.

10. A proofing head assembly as claimed in claim 2, wherein said controller receives data representing an image to be printed and converts this data into printing instructions for the printhead that are modified in accordance with color calibration and characterization adjustments.

11. A proofing head assembly as claimed in claim 10, wherein said controller further comprises a color calibrator to compare the color values measured from a test image printed by the printhead to known color values associated with the test image and to determine calibration adjustments based on this comparison.

12. A proofing head assembly as claimed in claim 11, wherein said controller further comprises a color processor to compare the color values measured from a test image printed by another device to known color values associated with the test image and to determine characterization adjustments based on this comparison.

13. A proofing head assembly as claimed in claim 10, wherein said controller further comprises a color calibrator to receive color measurement data

from the light analyzer at particular locations on a calibration test image printed by the printhead and to calculate calibration adjustments by comparing the color values measured at a particular location of a test image printed by the printhead to known color values associated with that location on the test image.

14. A proofing head assembly as claimed in claim 5, wherein said controller further comprises a color processor to receive color measurement data from the light analyzer at particular locations on a characterization test image printed by another device and to calculate characterization adjustments by comparing the color values measured at a particular location of a test image printed by another device to known color values associated with that location on the test image.

15. The print head of claim 1 wherein said housing comprises a closed frame.

16. The proofing head of claim 15 wherein said housing has an interior chamber to contain the printhead and the color light analyzer and further comprises an opening to permit ink from the printhead to pass to the outside of the housing and to further permit light to pass to the color light analyzer.

17. The proofing head of claims 2 – 14 wherein said housing defines a cavity for containing said printhead, said controller, and said color light analyzer, and said cavity defines an opening to permit ink to pass from the printhead onto a media and said cavity further permits light to pass between the color light analyzer and the media.

18. The printhead of claim 15, wherein said housing rigidly joins said color light analyzer and said color printhead.

19. A proofing head assembly comprising:  
a) a spectrophotometer ;

b) a color printhead; and

c) a controller;

wherein said spectrophotometer, said color printhead and said controller are joined to form an integral assembly.

20. The proofing head assembly of claim 19 wherein said printhead, said controller and said spectrophotometer are rigidly joined to form an integral assembly.

21. A proofing printer assembly for proofing an encoded image, said proofing printer comprising:

a proofing head having a color light analyzer and a color printhead joined by a housing that directs the printhead and color light analyzer at a media;

a translation mechanism to arrange the proofing head assembly relative to the surface of a media;

a media advance to position the media relative to the proofing head assembly and;

a controller to operate the proofing head assembly, the translation mechanism and the media advance.

22. The proofing printer assembly of claim 21 further comprising a controller to drive the color light analyzer to make color measurements of an image and to instruct the printhead to render images on a receiver media.

23. The proofing printer assembly of claim 22 wherein said controller calculates color adjustments using color measurement data from said color light analyzer and adjusts the colors printed by the printhead.

24. A proofing printer assembly as claimed in claim 23, wherein said controller adjusts the printing instructions transmitted to the printhead to match the visual appearance of an image printed by the printhead to the appearance of the same image as printed by another printer.

25. A proofing printer assembly as claimed in claim 24, wherein said controller calculates color adjustments by comparing color data measured from a printed image to baseline color data.

26. A proofing printer assembly as claimed in claim 25, wherein said controller instructs the printhead to print an image having known image code values and measures the colors printed by the printhead to adjust the operation of the printhead while the image is printing.

27. A proofing printer assembly as claimed in claim 22 wherein said controller uses said spectrophotometer to measure the colors printed by the printhead on a receiver media to verify that the colors printed on the media visually match the color printing instructions sent to the printhead.

28. A proofing printer assembly as claimed in claim 22 wherein said controller compares the color data measured from an image during the printing of an image to the colors that the printhead was instructed to render and provides a signal if the comparison indicates that the colors do not match.

29. A proofing printer assembly as claimed in claim 23, wherein said controller adjusts the operation of the printhead during printing operations to cause the colors in the printed image to conform to the colors that the printhead was instructed to print.

30. A proofing printer assembly as claimed in claim 22, wherein said controller receives data representing an image to be printed and converts this data into printing instructions for the printhead that are modified in accordance with color calibration and characterization adjustments.

31. A proofing printer assembly as claimed in claim 30, wherein said controller further comprises a color calibrator to compare the color values

measured from a test image printed by the printhead to known color values associated with the test image and to determine calibration adjustments based on this comparison.

32. A proofing printer assembly as claimed in claim 32, wherein said controller further comprises a color processor to compare the color values measured from a test image printed by another device to known color values associated with the test image and to determine characterization adjustments based on this comparison.

33. A proofing printer assembly as claimed in claim 31, wherein said controller further comprises a color calibrator to receive color measurement data from the light analyzer at particular locations on a calibration test image printed by the printhead and to calculate calibration adjustments by comparing the color values measured at a particular location on a test image printed by the printhead to known color values associated with that location of the test image.

34. A proofing printer assembly as claimed in claim 25, wherein said controller further comprises a color processor to receive color measurement data from the light analyzer at particular locations on a characterization test image printed by another device and to calculate characterization adjustments by comparing the color values measured at a particular location of a test image printed by another device to known color values associated with that location on the test image.

35. A proofing printer assembly as claimed in claim 34 wherein said controller further comprises a memory for storing more than one set of characterization adjustments and selectively applies the set of characterization adjustments associated with a particular printer.

36. A proofing printer assembly as claimed in claim 22 wherein said controller causes the proofer to render a test image, obtain color measurement

data from the test image, and calculate calibration adjustments in response to a single command from the user.

37. A proofing printer assembly as claimed in claim 22 or 36 wherein said controller causes the proofer to obtain color measurement data from a characterization test image, and calculate characterization adjustments in response to a single command from the user.

38. A proofing printer as claimed in claims 22 – 36 wherein said controller is contained in said housing.

39. A proofing printer assembly as claimed in claims 1 or 15 wherein said color light analyzer comprises a spectrophotometer.

